REMARKS

Claims 1-14 and 21-29 were examined and rejected. Applicant amends claims 1 and 21; cancels claims 15-20; and adds claims 30-31. Applicant asserts that no new matter is added herein as amendments to claims 1 and 21, and additional claims 30-31 are supported at least at paragraphs 26 and 37 of the application as originally filed. Applicants respectfully request reconsideration of amended claims 1-14 and 21-29, and consideration of additional claims 30-31 in view of at least the following remarks.

I. Claims Rejected Under 35 U.S.C. § 103

The Patent Office rejects claims 1-3 and 8-14 under 35 U.S.C. § 103(a) as being unpatentable over European Patent EP 1085562 A2 to Thilderkvist (Thilderkvist), in view of U.S. Patent Application Publication 2002/0067644 to Malik et al. (Malik). To render a claim obvious, all limitations of that claim must be taught or suggested by at least one properly combined reference.

Applicant respectfully disagrees with the rejection above and asserts that independent claims 1 and 21 are patentable over the cited references for at least the reasons that the references do not teach or suggest forming a silicon germanium layer on a substrate in a processing chamber, removing a portion of the silicon germanium layer in the processing chamber, and, following removing, smoothing a surface of the silicon germanium layer in the processing chamber, and forming a silicon layer on the smoothed surface, wherein a lattice spacing of the silicon is mismatched with a lattice spacing of the relaxed silicon germanium, as required by amended claim 1.

Thilderkvist teaches forming a silicon film 308 onto the smooth surface 303 of silicon film 302 as shown in Fig. 3C and described in paragraph 53. Similarly, Thilderkvist teaches forming silicon film 666 on smooth surface 664 of transferred silicon film 658 in Fig. 6G and paragraph 68. Specifically, Thilderkvist describes that thin silicon film 658 can be used to produce a compliant substrate for depositing a

relaxed defect free epitaxial silicon germanium film at the end of paragraph 65. However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Thilderkvist of forming a silicon layer on smooth surface, wherein a lattice spacing of the silicon is mismatched with a lattice spacing of the relaxed silicon germanium, as required by claim 1.

Similarly, Malik fails to cure the shortcoming of Thilderkvist noted above. Specifically, Malik teaches using a CMP process on silicon germanium (see Figs. 3B and 3C and paragraph 16), or using an etch annealing process (see Figs. 4B and 4C and paragraph 45). However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Malik of removing; following removing, smoothing; and forming a silicon layer on the smoothed surface, wherein a lattice spacing of the silicon is mismatched with a lattice spacing of the relaxed silicon germanium, as required by amended claim 1.

Hence for at least the reason that the cited references do not teach or suggest the above noted limitations of amended claim 1, Applicant respectfully requests the Patent Office withdraw the rejection above of claim 1.

In addition, as noted by the Patent Office, Thilderkvist fails to disclose forming a silicon germanium layer in the same processing chamber as removing and smoothing.

Instead, the Patent Office relies upon the combination of Malik with Thilderkvist to teach the above noted limitation. However, Applicant asserts that the combination of Malik with Thilderkvist would not motivate one having ordinary skill in the art to use the same chamber, as required by claims 1 and 21. Moreover, Applicant asserts that the combination is improper, as Thilderkvist teaches against forming in the same processing chamber that used to remove and smooth. Thilderkvist teaches using different chambers to perform different processes for forming a silicon on insulator (SOI) substrate. For example, Fig. 5 of Thilderkvist and paragraphs 56-70 show and

describe that chamber 504 is required for implanting ions, apparatus 506 is required to bond the handle wafer to the implanted donor wafer and to cleave the donor wafer from the handle wafer, chamber 508 is necessary to treat and smooth the surface of the silicon film, and load lock 510 is necessary to transfer the wafers into transfer chamber 502 for movement between chamber 504, apparatus 506, and chamber 508 (see paragraph 57 and Fig. 5). More particularly, Thilderkvist describes how the chambers of Fig. 5 are used in order to form a SOI substrate (e.g., see paragraph 58). Thus, Thilderkvist teaches that its smoothing operation is a part of forming a SOI substrate, requiring various chambers and a transfer chamber for moving wafers there between. On the other hand, Malik teaches a silicon layer as an active medium, where the silicon layer is deposited over a layer of silicon germanium which is grown onto a base silicon wafer (see paragraph 3, 7 and 34). However, the Patent Office has not identified and Applicant is unable to find any teaching in Malik of performing various fabrication processes in a single chamber for SOI substrate processing, such as for the substrate required in Thilderkvist. Specifically, the processing of Thilderkvist requires various chambers to form the SOI substrate and, thus, teaches against using the same chamber to perform the processes noted above for claim 1.

Moreover, due to this distinction, a practitioner in the art would not attempt to perform the processes of Thilderkvist in a single chamber as taught by Malik. Hence, for at least the additional reason that the combination of Malik with Thilderkvist is improper, Applicant respectfully requests the Patent Office withdraw the rejection above of claim 1.

Next, the Patent Office rejects claims 4-7 and 21-29 under 35 USC § 103(a) as being unpatentable over Thilderkvist and Malik and further in view of US Patent Application No. 2002/0197803 to Leitz et al. (Leitz).

Applicant respectfully disagrees with the rejection above for at least the reason that the cited references do not teach or suggest forming a silicon germanium layer on a substrate in a processing chamber, removing a portion of the silicon germanium layer in the processing chamber, and, following removing, smoothing a surface of the silicon germanium layer in the chamber, and forming a strained silicon layer on the smooth surface, as required by amended claim 21.

As noted above, Thilderkvist teaches forming a silicon film 308 onto the smooth surface 303 of silicon film 302 as shown in Fig. 3C and described in paragraph 53. Similarly, Thilderkvist teaches forming silicon film 666 on smooth surface 664 of transferred silicon film 658 in Fig. 6G and paragraph 68. Specifically, Thilderkvist describes that thin silicon film 658 can be used to produce a compliant substrate for depositing a relaxed defect free epitaxial silicon germanium film at the end of paragraph 65. However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Thilderkvist of forming a strained silicon layer on smooth surface as required by claim 21.

Similarly, Malik fails to cure the shortcoming of Thilderkvist noted above. Specifically, Malik teaches using a CMP process on silicon germanium (see Figs. 3B and 3C and paragraph 16), or using an etch annealing process (see Figs. 4B and 4C and paragraph 45). However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Malik of removing; following removing, smoothing; and forming a strained silicon layer on the smoothed surface, as required by amended claim 21.

Likewise, Leitz (US Patent Application No. 2002/0197803 A1) also fails to cure the deficiency of Thilderkvist. Specifically, Leitz teaches RIE removal of portion 28 and 38 of pad oxide 21 (see paragraph 37 and Figs. 3-4). However, the Patent Office has not identified and Applicant is unable to find any teaching or suggestion in Leitz of

smoothing following removing and forming a strained silicon layer on the smoothed surface, as required by amended claim 21.

Hence for at least the reason that the cited references do not teach or suggest the above noted limitations of amended claims 1 and 21, Applicant respectfully requests the Patent Office withdraw the rejection above of claim 21.

In addition, an argument analogous to the one above for claim 1 with respect to the improper combination of Thilderkvist and Malik applies here as well. Hence, for at least this additional reason, Applicant respectfully requests the Patent Office withdraw the rejection above of claim 21.

Any dependent claims not mentioned above are submitted as not being anticipated or obvious, for at least the reasons given above in support of their base claims.

CONCLUSION

In view of the foregoing, it is believed that all claims now pending (1) are in proper form, (2) are neither obvious nor anticipated by the relied upon art of record, and (3) are in condition for allowance. A Notice of Allowance is earnestly solicited at the earliest possible date. If the Examiner believes that a telephone conference would be useful in moving the application forward to allowance, the Examiner is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17, particularly, extension of time fees.

Respectfully submitted,
BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

Date: June 23, 2006

Angelo J. Gaz, Reg. No. 45,907

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

I hereby certify that this correspondence is being deposited with the United States Postal Service on the date shown below with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Amber D. Saunders 6/23/06

Amber D. Saunders Date